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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/506,559

09/02/2004

Jonathan James Westhall

04-708

1300

20306 7590 06/13/2007
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EXAMINER

PENG, CHARLIE YU

ART UNIT

PAPER NUMBER

2883

MAIL DATE

DELIVERY MODE

06/13/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/506,559	Applicant(s) WESTHALL ET AL.	
	Examiner Charlie Peng	Art Unit 2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 60-98 is/are pending in the application.
- 4a) Of the above claim(s) 68-80 and 83-98 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 60-67, 81 and 82 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>02/02/2005</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Species O, claims 60-67, 81 and 82, in the reply filed on 05 December 2006 is acknowledged. The traversal is on the ground(s) that multiple species share a common special technical feature. Particularly, applicant alleges that "independent claims 60 possesses a special technical feature common to all remaining independent (sic) claims 61-87", as based on the International Search Report. This is not found persuasive because based on an examination of the instant application, the examiner has determined that prior art discovered during the examination shows the claim 60 is obvious and unpatentable in its present form as shown in 35 U.S.C. 103(a) rejection below. Since the rejection shows there is no special technical relationship left among the claimed inventions, the species are without a general inventive concept.

With regard to claim 88-98, they are drawn to a mandrel. Applicant has elected Species O, an optical sensor assembly comprising no mandrel and comprising a support element with an external surface that is not compressible and no protective cover being in the form of a hose. Since applicant has elected an optical sensor and not a mandrel, the claims 88-98 are not part of the elected species. Since there is no common special technical feature between the elected Species O, which comprises no mandrel, and claims 88-98, the claims 88-98 are not part of the elected species.

The requirement is still deemed proper and is therefore made FINAL.

If applicant believes this assertion is incorrect, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit

on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Since applicant has not pointed out any supposed error in the election requirement, the requirement is still deemed proper and is therefore made FINAL.

Claims 68-79 and 82-98 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction requirement in the reply filed on 05 December 2006 (addressed above).

Claim Objections

Claim 81 is objected to because of the following informalities: coils cannot comprise or possess "a single hydrophone". Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 60-67 and 81 are rejected under 35 U.S.C. 103(a) as being unpatentable over UK Patent Application GB 2124784 (copy attached) to Brown in view of U.S. Patent 5,639,968 to Bobb et al. Brown teaches an apparatus for detecting onset of a crack in a structural member comprising:

four optical fiber coils 42 merged in series by fiber portions 43;

an elongated circular structural member 41;

wherein the apparatus provides for the detection of cracks propagating either transversely or longitudinally of the structural member 41. (See at least Fig. 4 and description.)

However, Brown invention functions only after a crack will already have formed (accompanied by corresponding crack/fracture of optical fibers) and does not predict when the structural member may be overcome by excessive strain on the structural member. As it is immediately evident to any ordinary artisan, though it is important to detect onset of the crack, it would be even more desirable under many circumstances to be notified before the crack ever occurs on the structural member.

Bobb teaches an improved optical fiber strain-to-failure sensor. Bobb notes that “(m)ost optical fibers will not fail until they have reached a strain level in the range of 20,000 to 30,000 microstrain, yet structures may fail at strain levels as low as 2000 to 3000 microstrain.” (col. 1, lines 38-41) Bobb teaches a modified optical fiber sensor (Fig. 1) whose lengths and cross-sectional areas are sized so that the optical fiber has a strain failure point equal to a predetermined amount of strain.

It therefore would have been obvious to one of ordinary skill in the art at the time the invention was made to use the optical fiber strain-to-failure sensor as suggested by Bobb to modify Brown’s invention so that one may, by observing whether the optical fiber has failed, establish whether the structural member has exceeded the predetermined amount of strain and/or faces impending failure.

With respect to the “when said support member is bent away from the elongated axis” clause, while features of an apparatus may be recited either structurally or functionally, claims

directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997)

A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Since it has been shown that one of ordinary skill in the art would find it obvious to establish any predetermined strain, including that caused by bending of the structural member, the rejection meets the claim. (See MPEP 2111 [R-1])

With specific reference to claim 61, though Brown and Bobb et al. does not specify the structural element can be bent to a curve having a radius of at least half a meter without the optical fiber's failing, it would have been obvious to one having ordinary skill in the art at the time the invention was made to determine a range of bending so as to calculate the predetermined failing strain for the purpose of, for example, not allowing excessive bending to destroy the aesthetic appearance of the structural member or other functionalities, since applicant has not provided any criticality to invention of this range and further since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working range involves only routine skill in the art. *In re Aller*, 105 USPQ 233. The rejection may be overcome by a showing of unexpected results.

With specific reference to claims 62, 64 and 65, though Brown and Bobb et al. do not specify the material It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a material having properties best fitted for this application, since it has been held to be within the general skill of a worker in the art to select a known material on

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the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416. The motivation may be one's need to choose a structural member having a memory of its original shape (flexible), a high tensile strength (steel), or a light weight yet strong material (carbon fiber).

Claim 82 rejected under 35 U.S.C. 103(a) as being unpatentable over Brown and Bobb et al. as applied to claim 60 above, and further in view of U.S. Patent 5,625,724 to Frederick et al. Brown and Bobb teach the optical fiber sensor apparatus but not a hydrophone. Frederick teaches a fiber optic sensor for use in a hydrophone system. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the optical sensor apparatus suggested by Brown and Bobb in a hydrophone having rigid mandrel as taught by Frederick in order to provide failure detection for Frederick's hydrophone.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charlie Peng whose telephone number is (571) 272-2177. The examiner can normally be reached on 9 am - 6 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ Charlie Peng /
Charlie Peng
Patent Examiner
Technology Center 2800